

It is the overall objective of the present invention to improve the state of the art regarding the provision of tactile indications for an ambulatory medical device. Favorably, the drawbacks of the state of the art as mentioned before are at least partially avoided.

In a general way, the overall objective is achieved by the subject matter of the independent
5 claims. Exemplary and favorable embodiments are defined by the subject of the dependent claims as well as the descriptions and figures.

In an aspect, the overall objective is achieved by an ambulatory medical device that is designed for attachment to a person's body. The ambulatory medical device includes a housing, the housing having a wall element and a vibrator coupling element. ~~The vibrator coupling element is~~
10 ~~hollow.~~ A convex outer surface of the vibrator coupling element projects from the ~~housing-wall~~ element towards the outside of the housing. The vibrator coupling element is coupled to the wall element via a connection element, with the connection element being arranged along a circumference of the vibrator coupling element. The ambulatory medical device further includes a vibrator. The vibrator is configured to mechanically vibrate upon activation. The vibrator is at
15 least partially arranged inside a volume defined by the vibrator coupling element and mounted to the vibrator coupling element. In some embodiments, the vibrator is completely or substantially completely arranged inside the volume of the vibrator coupling element.

The wall element, the vibrator coupling element and the connection element are typically structurally distinct. They may, however, be permanently or releasably connected.

20 The ambulatory medical device is skin-mountable by direct attachment to the skin, and/or via a skin attachment device as intermediate element as discussed in more detail further below.

CLAIMS

1. An ambulatory medical device ~~(1)~~, the ambulatory medical device ~~(1)~~ being designed for attachment to a person's body, the ambulatory medical device ~~(1)~~ including:
 - a) a housing ~~(10)~~, the housing having a wall element ~~(101)~~ and a vibrator coupling element ~~(102)~~,

wherein a convex outer surface of the vibrator coupling element ~~(102)~~ projects from the wall element ~~housing wall (X)~~ towards the outside of the housing ~~(X)~~, and the vibrator coupling element ~~(102)~~ is coupled to the wall element ~~(101)~~ via a connection element ~~(103)~~, with the connection element ~~(103)~~ being arranged along a circumference of the vibrator coupling element ~~(102)~~;
 - b) a vibrator ~~(11)~~, the vibrator ~~(11)~~ being configured to mechanically vibrate upon activation, wherein the vibrator ~~(11)~~ is at least partially arranged inside a volume defined by the vibrator coupling element ~~(102)~~ and mounted to the vibrator coupling element ~~(102)~~.
2. The ambulatory medical device ~~(1)~~ according to claim 1, wherein the vibrator ~~(11)~~ is configured to vibrate in a plane parallel to the wall element ~~(101)~~.
3. The ambulatory medical device ~~(1)~~ according to either of the preceding claims, wherein the vibrator coupling element ~~(102)~~ is calotte-shaped.
4. The ambulatory medical device ~~(1)~~ according to either of the preceding claims, wherein the vibrator coupling element ~~(102)~~ is displaceable relative to the wall element ~~(1)~~.

5. The Aambulatory medical device-~~(1)~~ according to either of the preceding claims, wherein the connection element-~~(103)~~ is flexible.
6. The Aambulatory medical device-~~(1)~~ according to either of the preceding claims, wherein the connection element-~~(103)~~ is designed as bellows.
- 5 7. The Aambulatory infusion device according to either of the preceding claims, wherein the housing-~~(10)~~ is substantially rigid.
8. The Aambulatory medical device-~~(1)~~ according to either of the preceding claims, wherein a mass of the vibrator coupling element-~~(102)~~ is small as compared to a mass of the housing-~~(10)~~.
- 10 9. The Aambulatory medical device-~~(1)~~ according to either of the preceding claims, wherein the wall element-~~(101)~~ is coupled to the vibrator coupling element-~~(102)~~ in a hermetically sealing manner.
10. The Aambulatory medical device-~~(1)~~ according to either of the preceding claims, wherein the vibrator-~~(11)~~ is a coin vibration motor.
- 15 11. The Aambulatory medical device-~~(1)~~ according to either of the preceding claims, wherein the ambulatory medical device-~~(1)~~ is an ambulatory infusion device, in particular an insulin pump.
12. The Aambulatory medical device-~~(1)~~ according to either of the preceding claims, wherein the housing-~~(10)~~ includes an attachment device mounting structure-~~(13)~~ for releasable mounting the ambulatory medical device-~~(1)~~ to a skin attachment device-~~(2)~~.
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13. A ~~S~~skin attachment device ~~(2)~~, the skin attachment device ~~(2)~~ including substantially planar body ~~(21)~~ with a skin attachment side and an opposing medical device mounting side;

- wherein the skin attachment side includes a skin attachment structure ~~(23)~~ for releasable attaching the skin attachment device to a person's skin;

5 - wherein the medical device mounting side includes a medical device mounting structure ~~(22)~~ for releasable engaging with the attachment device mounting structure ~~(13)~~ of ~~the~~ ambulatory medical device ~~(1)~~ according to claim 12,

10 - wherein the body ~~(21)~~ includes a vibrator coupling opening ~~(21a)~~ which is configured such that in a configuration in which the medical device is mounted to the skin attachment device, the vibrator coupling element projects through the vibrator coupling opening towards the skin attachment side, and

- wherein the skin attachment device ~~(2)~~ further includes a cannula coupling structure ~~(24a)~~ for coupling with a cannula ~~(12)~~ and/or a fluidic coupling structure ~~(24)~~.

15 14. An ~~A~~ambulatory medical system, the ambulatory infusion system including ~~the~~ ambulatory medical device ~~(1)~~ according to claim 12 and at least one skin attachment device ~~(2)~~ according to claim 13,

wherein, in a configuration in which the medical device ~~(1)~~ is mounted to the skin attachment device ~~(2)~~, the vibrator coupling element ~~(102)~~ projects through the vibrator coupling opening ~~(21a)~~ towards the skin attachment side.

15. A ~~M~~method for providing tactile indications to a person carrying ~~the~~an ambulatory medical device according to either of claims 1 to 12 or ~~the~~an ambulatory medical system according to claim 14, the method including actuating the vibrator ~~(11)~~, thereby transmitting a vibration in a plane parallel to the wall element ~~(101)~~ to the person's skin.